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(54) Abstract Title

Vermin trap

(57) A vermin trap 1 comprises two terminals, an electrical floor plate 14 and an electrical shelf 16. A rodent can only enter the trap 1 through an access hole 12. Once inside the trap 1 the rodent goes around a barrier 18 and steps on the floor plate 14. In order to reach some bait inside a tube 20 the rodent has to reach up to the shelf 16. On touching the shelf 16 the rodent completes an electrical circuit and a current passes through the rodent. This current is sufficient to kill the rodent. The trap may be tubular and comprise two entrances and three terminals (fig 5). The barrier 18 prevents direct access to the terminals. The bait tube 20 may be removed from the trap whilst the lid is closed. The lid when shut closes a switch 22 to connect the power source (mains or battery) to the terminals. This switch acts as a cut off when the lid is open.

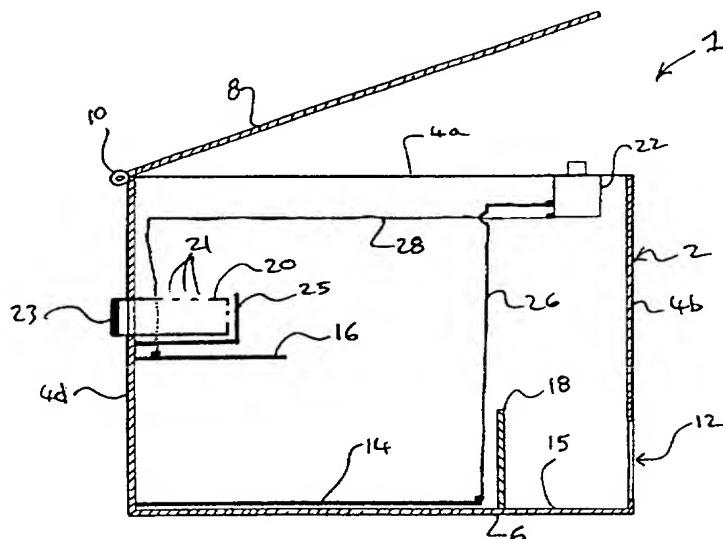


Figure 2

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

This print takes account of replacement documents submitted after the date of filing to enable the application to comply with the formal requirements of the Patents Rules 1995

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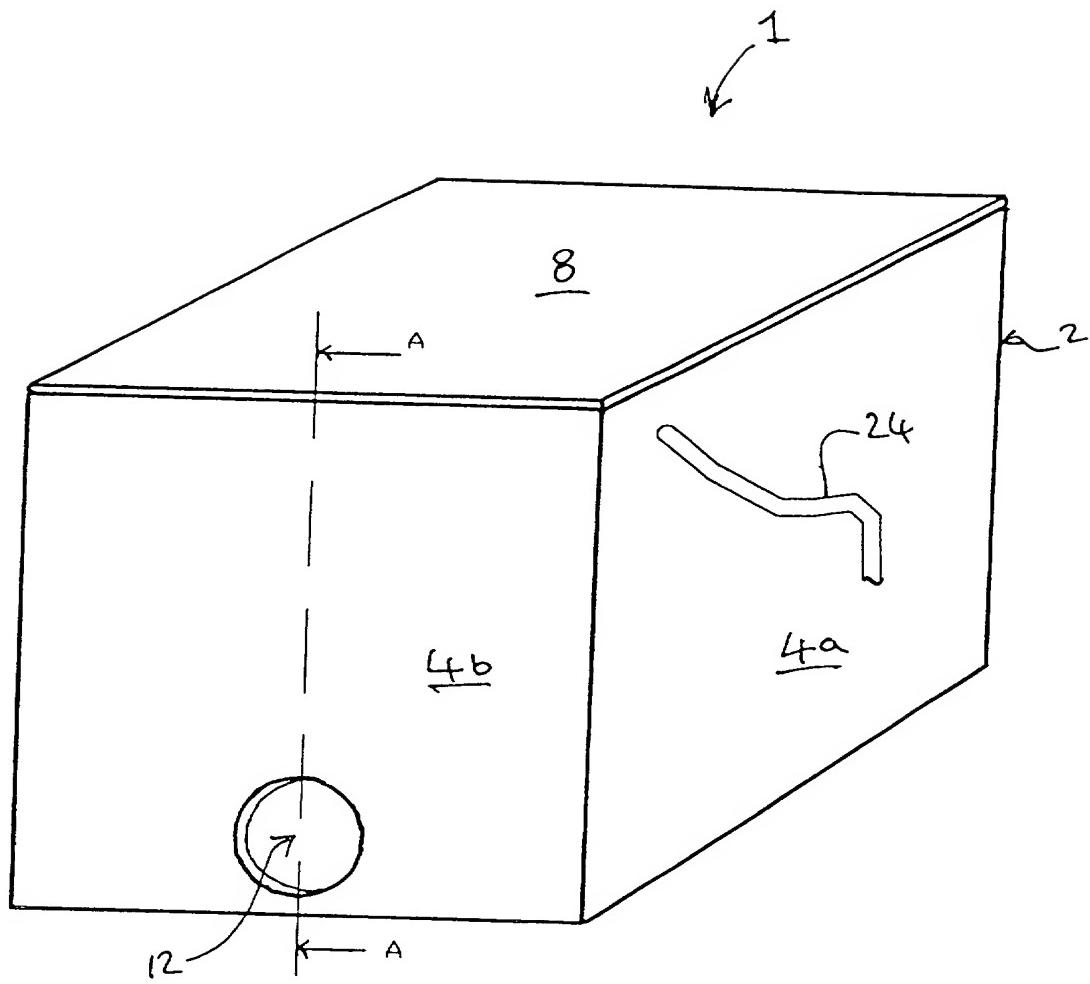
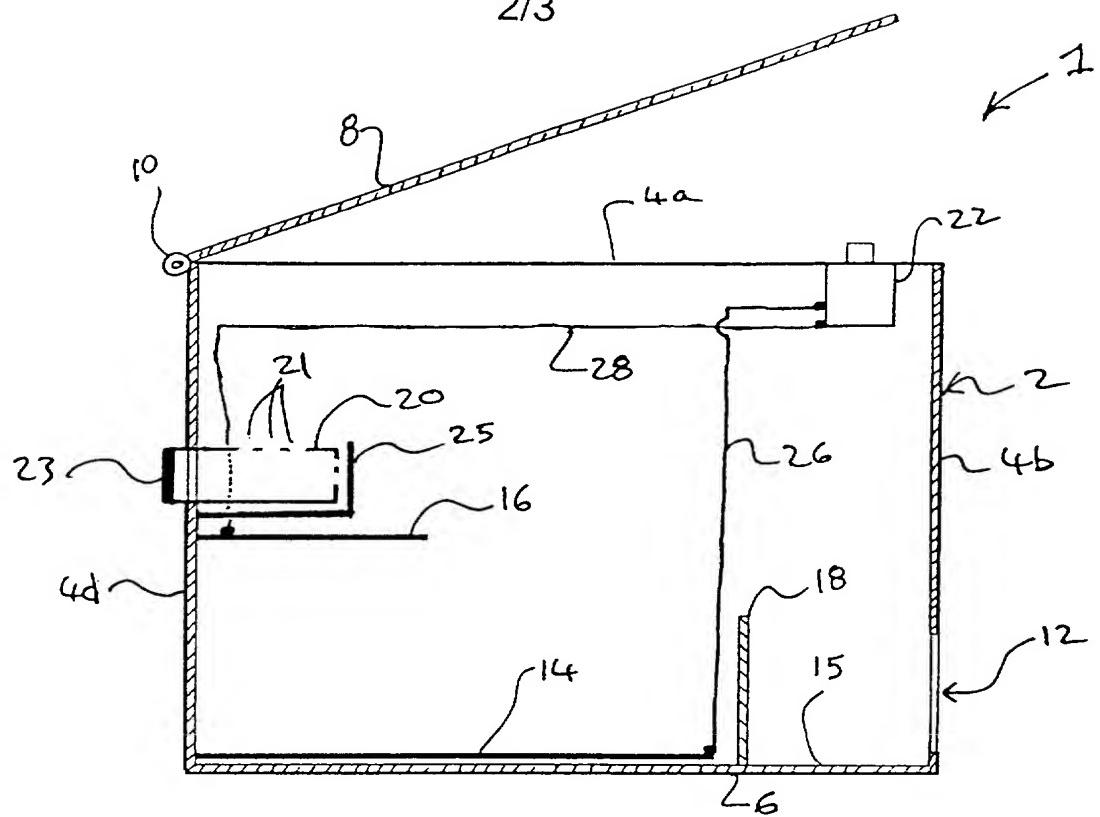
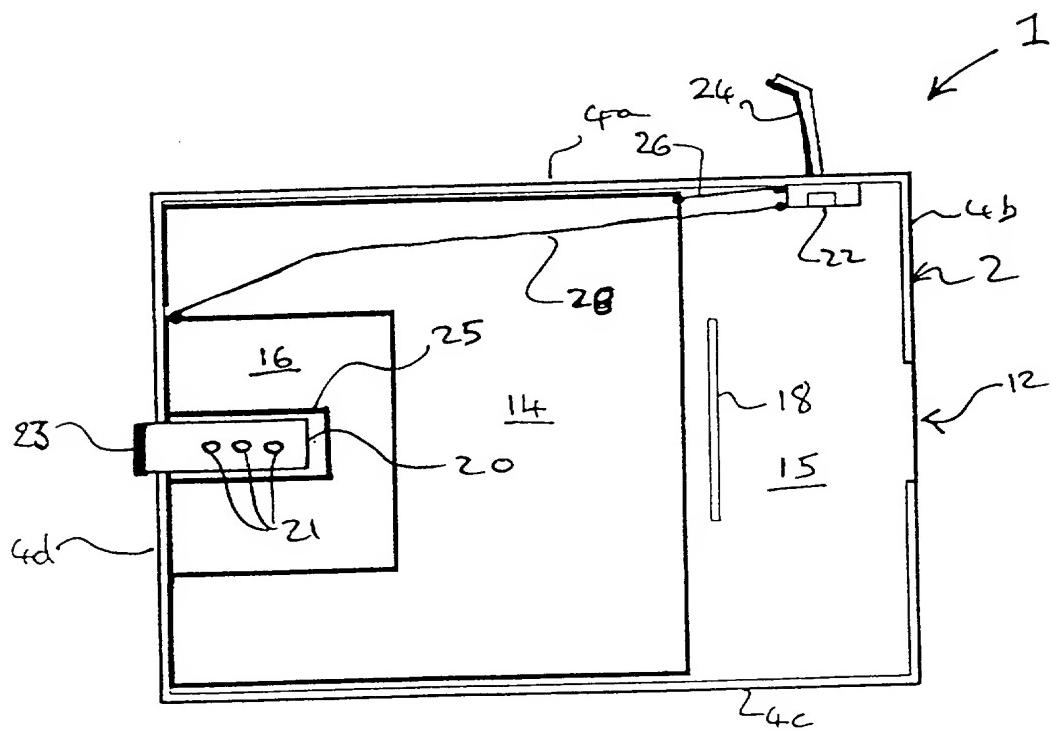
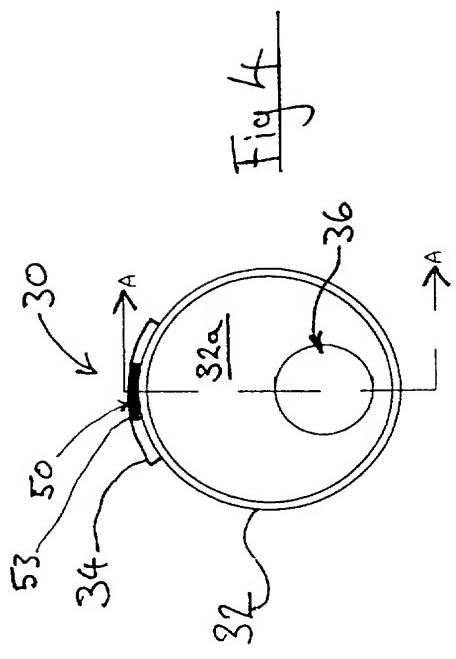
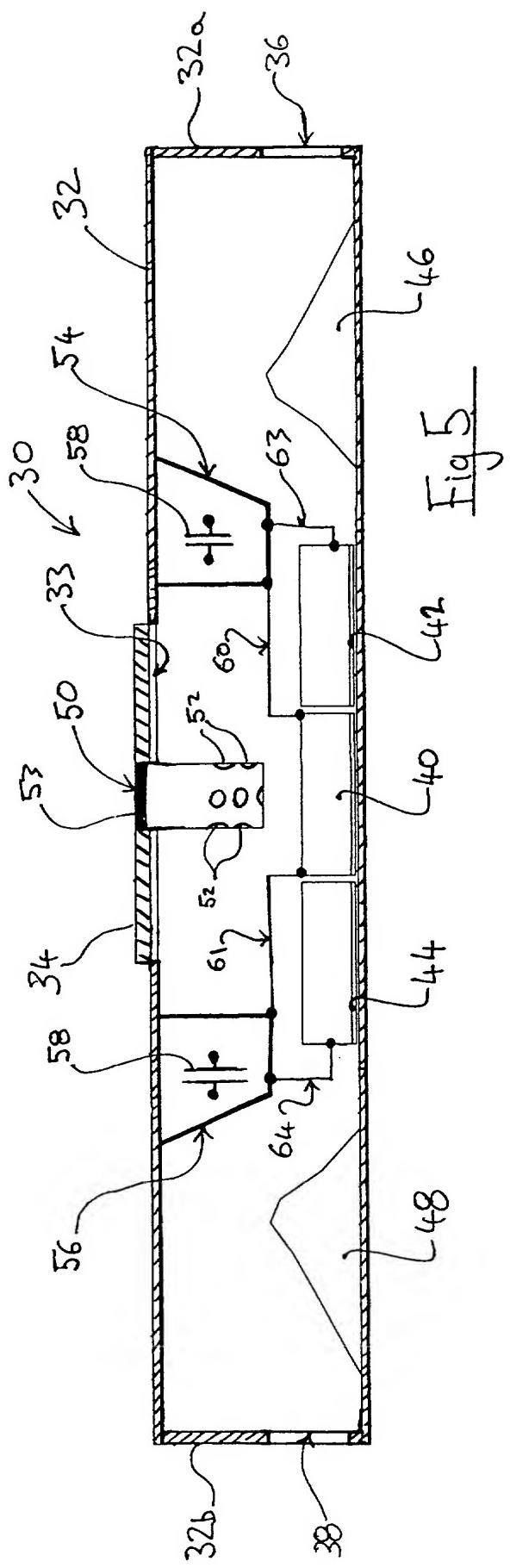


Figure 1

Figure 2Figure 3



VERMIN TRAP

The present invention relates to a vermin trap and more particularly to a vermin trap for the electrocution of vermin.

In existing vermin traps an unwanted rodent is killed either by poison or
5 by mechanical means such as a bar being snapped down by a spring onto
the rodent.

According to the present invention there is provided a vermin trap comprising an enclosure formed with an animal access hole, the enclosure containing two electrical terminals separated from each other and a power
10 supply, the arrangement being such that, in use, when an animal touches both terminals at the same time the animal is electrocuted.

Preferably, the vermin trap comprises means to entice an animal to touch both of the terminals.

One of the terminals is preferably a lower electrically conductive floor
15 plate.

Preferably, the lower floor plate substantially covers the floor of the enclosure. A number of the edges of the lower floor plate may extend upwardly against the walls of the enclosure so forming an electrically conductive tray.

20 The second terminal is preferably an upper electrically conductive shelf. Preferably the shelf is disposed on a wall of the enclosure.

It will be appreciated that the terminals could be made of any suitable electrically conductive material such as, but not limited to, metal. It

should also be appreciated that the structure of the terminals is not necessarily limited to a solid plate but could be a wire mesh or a foil.

It is desirable to have safety features incorporated into the enclosure because of the use of electricity to electrocute the vermin.

- 5 Preferably, the second terminal is disposed on the wall opposite to the access hole.

The vermin trap preferably comprises electrical cut-off means.

- 10 The enclosure preferably comprises a lid and an electrical cut-off switch, the arrangement being such that, in use, when the lid is opened the cut-off switch cuts electrical power to either of the terminals.

The enclosure preferably comprises means to prevent direct access to the terminals via the access hole.

- 15 Preferably the means to prevent direct access to the terminals is a barrier portion located between the terminal on the floor of the enclosure and the access hole. The barrier is preferably a wall section extending upwardly from the inner surface of the enclosure.

The means to entice an animal to touch both of the terminals is preferably bait. In use the bait is preferably located above the upper shelf. Alternatively, in use, the bait is located on the shelf.

- 20 The enclosure preferably comprises a receptacle for holding the bait.

The bait within the receptacle is preferably accessible from outside the enclosure when the lid is in the closed condition. The receptacle is preferably a tube extending through a hole formed in the wall of the

enclosure and being removable from the enclosure when the lid is in the closed condition.

The enclosure preferably comprises means to prevent direct access to the terminals via the hole formed in the wall of the enclosure when the
5 receptacle is removed from the enclosure.

The means to prevent direct access to the terminals via the hole formed in the wall of the enclosure is preferably of a tubular shape having a diameter greater than the diameter of the receptacle.

It will be appreciated that the receptacle and means to prevent direct
10 access to the terminals via the hole formed in the wall are each formed with breathe holes such that the aroma of the bait can be detected by the rodent from inside the trap.

Alternatively the means to prevent direct access via the hole formed in the wall of the enclosure is a channel section having an uppermost open
15 portion. The channel section preferably extends from the innermost surface of a wall of the enclosure.

The receptacle is preferably a light transparent material. The means to prevent direct access via the hole formed in the wall is preferably a light transparent material. It will be appreciated that the receptacle and said
20 means to prevent direct access may allow light to enter into the trap so illuminating said bait.

The power supply may be mains electricity.

Alternatively, the power supply is a portable power unit.

The power unit preferably comprises a capacitor.

The portable power unit is preferably a rechargeable battery and a capacitor.

According to an embodiment of the present invention there is provided a
5 vermin trap comprising a portable power supply and a tubular enclosure
formed with animal access means and containing a first electrical terminal
disposed between a second electrical terminal and a third electrical
terminal, the arrangement being such that, in use, when an animal enters
the vermin trap and touches the first electrical terminal and either of the
10 second or third electrical terminals the animal is electrocuted.

Preferably, the animal access means comprises two access holes, one hole
being located at each end of tubular enclosure.

The vermin trap preferably comprises means to prevent direct access to
the electrical terminals via the access holes.

15 The invention may include any combination of the features or limitations
referred to herein.

The present invention may be carried into practice in various ways, but
two embodiments will now be described, by way of example only, with
reference to the accompanying drawings in which:

20 **Figure 1** is a perspective view of a vermin trap with the lid in the
closed position;

Figure 2 is a cross-section view through AA of the vermin trap
shown in Figure 1 and with the lid in the open position;

Figure 3 is a plan view of the vermin trap shown in Figure 1 with the lid removed;

Figure 4 is a side view of a second embodiment of a vermin trap according to the present invention; and

5 **Figure 5** is a cross section through AA of the vermin trap shown in Figure 4.

Referring to the Figures, a vermin trap 1 includes a rectangular box 2 comprising four sides 4a, 4b, 4c, 4d, a base 6 and an enclosure lid 8. The lid 8 is attached to the uppermost edge of the side 4d by a hinge 10.
10 The lid 8 may also include a locking mechanism (not shown). The side 4b is formed with a circular access hole 12. The diameter of the hole 12 is large enough for rodents, such as rats or mice, to fit there through.

Inside the box 2 there is a rectangular metal floor plate 14 and a
15 rectangular metal shelf 16. The floor plate 14 covers a substantial portion of the inner surface of the base 6. The floor plate 14 does not extend up to the side 4b and there is a region 15 of uncovered base 6 adjacent the side 4b. Extending upwardly from the surface of the region 15 is a barrier plate 18. The plate 18 is between the floor plate 14 and the access hole 12. The arrangement of the plate 18 is such that there is no direct access to the floor plate 14 from the access hole 12. The plate 18 prevents a person from being able to touch the floor plate 14 or the shelf 16 via the access hole 12.
20

The shelf 16 is attached to the inner surface of the side 4d and is
25 vertically spaced from the floor plate 14. Above the shelf 16 and extending through the side 4d is a bait tube 20.

The bait tube 20 is removable from outside the box 2 and can be filled with bait when the lid 8 is in the closed condition. The bait tube 20 is formed with a number of breath holes 21 through which the bait aroma passes from the tube 20 to the inside of the trap 1. The outermost end of 5 the tube 20 is sealed with a screw-on cap 23. A channel section 25 extends from the inner surface of the side 4d. The channel section 25 has an uppermost open portion and substantially cups the bait tube 20. When the bait tube 20 is removed from the trap 1 the channel section 25 prevents direct access to the shelf 16 and the floor plate 14. The channel 10 section 25 prevents a person from being able to touch the floor plate 14 or the shelf 16 via the hole formed in the side 4d when the bait tube 20 is removed. In an alternative arrangement the channel section 25 could be a tube formed with breath holes or alternatively a wire mesh-like structure.

The bait tube 20, screw-on cap 23 and channel section 25 may all be 15 made of a light transparent material such as perspex. Light may enter the trap 1 through the bait tube 20, screw-on cap 23 and channel section 25.

Attached to the uppermost edge of side 4a is an electrical cut-off switch 22. An electrical power cable 24 extends from the switch 22 to the outside of the box 2. The cable 24 provides mains power to the 20 switch 22. Extending from the switch 22 to the floor plate 14 is an earth wire 26 and extending from the switch 22 to the shelf 16 is a live wire 28. The exposed ends of the wires 24, 26 are each electrically connected to respective terminals on the switch 22, the shelf 16 and the floor 14. The switch 22 provides power to the trap 1 only when the lid 8 25 is in the closed condition.

In use the lid 8 is closed and the bait tube 20 is filled with bait. A rodent can only enter the trap 1 through the access hole 12. Once inside the trap 1 the rodent goes around the plate 18 and steps on the floor plate 14.

In order to reach the bait inside the tube 20 the rodent has to reach up to the shelf 16. On touching the shelf 16 the rodent completes an electrical circuit and a current passes through the rodent. This current is sufficient to kill the rodent.

- 5 With reference to Figures 4 and 5, a second embodiment of the present invention is shown. A vermin trap 30 includes an elongate tube 32 comprising two end walls 32a, 32b each having a circular cross section, an upper access slot 33 formed in the wall of the tube 32 and an enclosure lid 34. The lid 34 may also include a locking mechanism (not shown). The end wall 32a is formed with a circular access hole 36 and the end wall 32b is formed with a circular access hole 38. The diameters of the holes 36, 38 may be only large enough for rodents, such as rats or mice, to fit through.
10

Inside the tube 32 there is a central metal channel plate 40 disposed between two metal channel plates 42, 44. Each channel plate comprises a base section and two side sections extending upwardly from the respective side edges of the base section. The side sections substantially follow the inner curved surface of the tube 32. The channel plates 40, 42, 44 are separated from each other.

- 20 Extending upwardly from the inner lowermost surface of the tube 32 are two barrier plates 46 48. The barrier plate 46 is located between the channel plate 42 and the access hole 36. The barrier plate 48 is located between the channel plate 44 and the access hole 38. The arrangement of the barrier plates 46, 48 is such that there is no direct access to either of the channel plates 42, 44 from either of the access holes 36, 38. The barrier plates 46, 48 prevent a person from being able to touch the channel plates 40, 42, 44 via the access holes 36, 38.
25

The lid 34 may be attached to the tube by any suitable means such as a hinge and catch assembly (not shown). The lid 34 may also include an electrical cut-off switch (not shown) that operates when the lid 34 is opened. Extending through the lid 34 is a bait tube 50.

- 5 The bait tube 50 is removable from the tube 32 and can be filled with bait when the lid 34 is in the closed condition. The bait tube 50 is formed with a number of breath holes 52 through which the bait aroma passes from the tube 50 to the inside of the trap 30. The outermost end of the tube 20 is sealed with a cap 53. The bait tube 50 and cap 53 may be
10 formed from a transparent material that allows light to enter the trap 30 and provide illumination to the interior of the tube 32. This feature will also help to attract a rodent towards the bait tube 50.

Contained within the tube 32 are two power units 54, 56 comprising rechargeable batteries (not shown) and capacitors 58. The power units 15 54, 56 are arranged to supply sufficient electrical charge to terminate a rodent. The power units 54, 56 may be similar in design to the power units used for cattle prods. The one part of the electrical circuit of each of the power units 54, 56 is connected to the central channel plate 40 by respective wires 60, 61. The second part of the electrical circuit of each 20 54, 56 is connected to the respective channel plates 42, 44 by respective wires 63, 64.

In use the lid 34 is closed and the bait tube 50 is filled with bait. A rodent can only enter the trap 30 through the access holes 36, 38. Once inside the trap 30 the rodent has to first go past one of the barrier plates 25 46, 48 and steps on one of the channel plates 42, 44. In order to reach the bait inside the tube 50 the rodent has to step on the central channel plate 40 whilst still touching one of the channel plates 42, 44. On touching the central plate 40 and one of the other channel plates 42, 44

the rodent completes an electrical circuit. The charge in the capacitors 58 is then discharged and an electrical current passes through the rodent. The current is sufficient to kill the rodent. Rodents tend to run along beside the walls of buildings. The trap 30 may be placed adjacent the 5 wall of a building in the natural path of a rodent. This will increase the likelihood of a rodent discovering the trap 30 and being attracted by the bait.

The second embodiment includes the advantage of being portable. There are many locations where there may not be mains power. The trap 30 10 comprises a self-contained power supply in the form of the power units 54, 56. The power units 54, 56 may be charged up overnight or replacement power units could be used.

The first embodiment herein before described may comprise a power supply using similar portable power units 54, 56.

CLAIMS

1. A vermin trap comprising an enclosure formed with an animal access hole, the enclosure containing two electrical terminals separated from each other and a power supply, the arrangement being such that, in use, when an animal touches both terminals at the same time the animal is electrocuted.
2. A vermin trap according to claim 1, wherein the vermin trap comprises means to entice an animal to touch both of the terminals.
3. A vermin trap according to claim 1 or claim 2, wherein one of the terminals is a lower electrically conductive floor plate.
4. A vermin trap according to claim 3, wherein the lower floor plate substantially covers the floor of the enclosure.
5. A vermin trap according to claim 3 or claim 4, wherein a number of the edges of the lower floor plate extends upwardly against the walls of the enclosure so forming an electrically conductive tray.
6. A vermin trap according to any one of the preceding claims, wherein the second terminal is an upper electrically conductive shelf disposed on a wall of the enclosure.
7. A vermin trap according to any one of the preceding claims, wherein the second terminal is disposed on the wall opposite to the access hole.
8. A vermin trap according to any one of the preceding claims, wherein the vermin trap comprises electrical cut-off means.

9. A vermin trap according to any one of the preceding claims, wherein the enclosure comprises a lid and an electrical cut-off switch, the arrangement being such that, in use, when the lid is opened the cut-off switch cuts electrical power to either of the terminals.
- 5 10. A vermin trap according to any one of the preceding claims, wherein the enclosure comprises means to prevent direct access to the terminals via the access hole.
11. A vermin trap according to claim 10, wherein the means to prevent direct access to the terminals is a barrier portion located between the 10 terminal on the floor of the enclosure and the access hole.
12. A vermin trap according to claim 11, wherein the barrier is a wall section extending upwardly from the inner surface of the enclosure.
13. A vermin trap according to any one of claims 2 to 12, wherein the means to entice an animal to touch both of the terminals is bait.
- 15 14. A vermin trap according to claim 13, wherein, in use, the bait is preferably located above the upper shelf.
15. A vermin trap according to claim 13, wherein, in use, the bait is located on the shelf.
16. A vermin trap according to any one of the preceding claims, 20 wherein the enclosure comprises a receptacle for holding the bait.
17. A vermin trap according to claim 16, wherein the bait within the receptacle is accessible from outside the enclosure when the lid is in the closed condition.

18. A vermin trap according to claim 16 or claim 17, wherein the receptacle is a tube extending through a hole formed in the wall of the enclosure and being removable from the enclosure when the lid is in the closed condition.
- 5 19. A vermin trap according to any one of claims 16 to 18, wherein the enclosure comprises means to prevent direct access to the terminals via the hole formed in the wall of the enclosure when the receptacle is removed from the enclosure.
- 10 20. A vermin trap according to claim 19, wherein the means to prevent direct access to the terminals via the hole formed in the wall of the enclosure is of a tubular shape having a diameter greater than the diameter of the receptacle.
- 15 21. A vermin trap according to claim 19, wherein the means to prevent direct access via the hole formed in the wall of the enclosure is a channel section having an uppermost open portion.
22. A vermin trap according to claim 21, wherein the channel section extends from the innermost surface of a wall of the enclosure.
23. A vermin trap according to any one of claims 16 to 20, wherein the receptacle is a light transparent material.
- 20 24. A vermin trap according to any one of claims 19 to 22, wherein the means to prevent direct access via the hole formed in the wall is a light transparent material.
25. A vermin trap according to any one of the preceding claims, wherein, the power supply uses mains electricity.

26. A vermin trap according to any one of claims 1 to 24, wherein the power supply is a portable power unit.
27. A vermin trap according to claim 26, wherein the power unit comprises a capacitor.
- 5 28. A vermin trap according to claim 26, wherein the portable power unit comprises a rechargeable battery and a capacitor.
29. A vermin trap comprising a portable power supply and a tubular enclosure formed with animal access means and containing a first electrical terminal disposed between a second electrical terminal and a 10 third electrical terminal, the arrangement being such that, in use, when an animal enters the vermin trap and touches the first electrical terminal and either of the second or third electrical terminals the animal is electrocuted.
30. A vermin trap according to claim 29, wherein the animal access 15 means comprises two access holes, one hole being located at each end of tubular enclosure.
31. A vermin trap according to claim 29 or 30, wherein the vermin trap comprises means to prevent direct access to the electrical terminals via the access holes.
- 20 32. A vermin trap substantially as herein described with reference to the accompanying drawings.



Application No: GB 0020967.6
Claims searched: 1-32

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Date of search: 26 January 2001

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.S): A1M MDD, MDH

Int Cl (Ed.7): A01M 23/38

Other: Online: WPI, EPODOC, JAPIO

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
P,X	GB 2343356 A (CARTER) Whole document relevant	1-4, 6-7, 13-16 & 26
X	GB 2107164 A (BALDWIN) Whole document relevant	1-4, 6-7, 16-17 & 26
X	GB 2023398 A (MUNNS) Whole document relevant	1-3, 10, 13-17 & 25
X	GB 1301130 (RUSSELL) Whole document relevant	X: 1-3, 7-8, 10-16, 25 & 29-31
X	WO 95/33372 A1 (AGRIZAP) Whole document relevant see especially Figures 3a-f and page 7 lines 27-37	X: 1-5, 13 & 26-28
X	WO 80/00397 A1 (WILSON) Whole document relevant	1-2, 8, 10-18 & 25
X	US 5406742 (ALLEN) Whole document relevant	1-4, 6-7, 13-16 & 26-28

X Document indicating lack of novelty or inventive step
Y Document indicating lack of inventive step if combined with one or more other documents of same category.

& Member of the same patent family

A Document indicating technological background and/or state of the art.
P Document published on or after the declared priority date but before the filing date of this invention.

E Patent document published on or after, but with priority date earlier than, the filing date of this application.



Application No: GB 0020967.6
Claims searched: 1-32

15

Examiner: Paul Jenkins
Date of search: 26 January 2001

Category	Identity of document and relevant passage		Relevant to claims
X	US 4780985	(COOTS) Whole document relevant	1-2, 8-9 & 25
X	US 4074456	(TIDWELL) Whole document relevant see especially figure 2	1-2, 8-10, 16 & 25
X	FR 2689371 A1	(RICHARD) See WPI and EPODOC abstracts and all the figures especially figures 1, 2 & 6	1-16 & 25

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

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